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| Lesson Title: | | Creating Double Bar and Circle Graphs Using Microsoft Excel | | | | | | | | |
| **Teacher:** | Amy Nelson | | **Hour:** | | 2, 4, 5 | | | | |
| **Unit:** | Probability and Statistics | | **Date:** May 2011  **Target Grade Level:** 6 | | | | | | |
| **Course:** | 6th Grade Math | |  |  | |  |  |  |

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| **Learning Target(s):** | Students will construct double bar graphs and circle graphs using Microsoft Excel. |
| **Criteria for Success:** | Bar Graphs:   1. Did I select the appropriate type of graph? 2. Is all data entered correctly? 3. Is the beginning and end for the vertical axis correct? 4. Is the scale appropriate? 5. Did I include a title, horizontal axis label, vertical axis label, and include units in the label (if necessary)? Did I label the bars?   Circle Graphs:  1) Did I select the appropriate type of graph?  2) Is all data entered correctly?  3) Did I include a title?  4) Do I have labels for each section?  5) Did I include percents for each section? |
| **Progression of Learning:** | Hand drawn graphs noting all important components of graph, creating data tables, creating line graphs (and other types of graphs), self-assessing graphs using rubric, cutting and pasting graph and table into word for presentation, citing source of data, analyzing graph |

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| **Content Area Standards, Essential Learnings, and Evidence Outcomes** | **21st Century Skills and Abilities** | **ISTE NET-S, ITEEA, or L4L Standards Addressed** |
| 5.2a Read, use, and create scales on a number line or graph.  3.1a Construct, interpret, and draw conclusions from a line graph.  2.2b Draw a graph for a given table or scenario.  3.1c Read and interpret a circle graph. | * Collaboration and Teamwork * Critical Thinking, Reasoning, and Problem Solving * Invention, Innovation, and Creativity * Self-Direction * Information Literacy * Global Awareness * Inquiry Questions * Relevance and Application * Nature of Discipline | Standard 3: The information literate student uses information accurately and creatively.  3.1 Organizes information for practical application. |

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| **Pre-Assessment Summary** |  | **Post-Assessment Summary** |
| Pre-assesment was done on paper with bar graphs, and then informally regarding graphing in Excel. Students lacked any basic knowledge in Excel, prior to the first Excel lesson. |  | In addition to grading student’s graphs using the rubric, students were required to create a line graph in Excel on their final exam. Considering the limited amount of knowledge students had prior to our first Excel lesson, I was very impressed with the outcome. I am confident this is a skill students will retain and be able to use for practical application. |

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| **Summary of Differentiation Strategies and Students** |  | **Summary of Research Based Instruction Strategies** |
| This particular activity did not require a lot of differentiation. In fact, many of the students that typically struggle with pencil/paper tasks excelled in this lesson. Some students required more one-on-one. With these students I sat them next to a classmate who was more comfortable using the program that could help me in answering questions. Students that became comfortable with Excel and completed the activity quickly were given explore time. They were told they must show me at least 3 interesting things they figured out about Excel. I was quite impressed with what they came up with! |  | Student and teacher will focus on learning goals, evaluate current work as it relates to the goal, and then make necessary adjustments while working towards the goal.[[1]](#footnote-1) We will do this through the use of a rubric and peer evaluation. Students will continue to evaluate their work and adjust as necessary to ensure they meet all criteria for success. |

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| **Technology Materials and Resources** |  | **Other Materials and Resources** |
| -Computer for each student with Microsoft Office  -CIA website  -LCD screen or projector for modeling |  | -Latin America project folder |

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| **Student Self-Assessment Strategies** |  | **Student Goal Setting Strategies** |
| Students will use the rubric provided to self-assess the graph and table they created. |  | Students set goals based on their hand-drawn graphs. Looking at the bar graph they drew using pencil and paper, what could you improve upon when working in Excel? |

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| **Tier 1 Interventions (Universal) and Students** |  | **Strategically Planned Questions** |
| Whole group modeling  Rubric  Partner evaluation |  | Did you select the appropriate type of graph?  Is all the data entered correctly?  Is the beginning and end for horizontal and vertical axis correct?  Is the scale appropriate?  Did you include a title, horizontal axis label, vertical axis label, and include units in the label (if necessary)?  How do you know what type of graph you should use?  Is there another type of graph that could be used for this data? Why or why not? |

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| **Tier 2 Interventions (Targeted) and Students** |  | **Vocabulary** |
| Whole group modeling  Rubric  Partner evaluation  Opportunity to revise |  | Cell  Table  Column  Row  Chart  Data  Horizontal/vertical axis  label |

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| **Tier 3 Interventions (Intensive) and Students** |  | **ELL Strategies** |
| Whole group modeling  Rubric  Partner evaluation  Extra time (teacher open lab at 8 for students who need more time with Excel) |  | -Model vocabulary  -Showing each vocab. word by pointing/highlighting etc. on LCD, and have student’s do the same on their individual computer |

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|  | Activities and Lesson Procedures | Pacing |
| **Motivation (hook)** | When looking at graphs in the newspaper, presentations, etc., do you ever see a hand-drawn graph?  (Show a hand-drawn graph and an Excel graph) Which one is more appealing? Which one would you rather include in a presentation you were giving? Would you believe me if I told you this one (excel) probably took me less than ½ the time of this one (hand drawn)? | 5 |
| **Introduction** | Today, we are going to learn how to create double bar graphs and circle graphs in Excel. We are going to create these for GDP and labor force and ethnicities for your social studies project. | 3 |
| **Direct Teaching** | At this point, students have created graphs using Microsoft Excel- explain that creating a double bar graph isn’t much different than creating the bar graphs they have created. Show an example of a double bar graph and what option to use in Excel. Explain to students that when creating the data table, they will use 3 columns, no spaces between. | 5 |
| **Guided Practice** | Show students the CIA website and how to locate data. Show how to set up graph side by side on the screen with the Excel sheet. Walk through an example using the LCD screen. Students have rubric in hand. Have students use the rubric to assess whether all criteria for success has been met in the examples. | 10 |
| **Feedback** | Feedback will be given using the rubric (see attached), as well as the overall appearance of the graph. | Throughout the lesson |
| **Independent Practice** | Using CIA data for their country, each student will create a circle graph for the ethnicities of their country, and a double bar graph for GDP and labor force. | 20 |
| **Closure** | Today our goal was to create double bar graphs and circle graphs in Excel. How does graphing in Excel compare to pencil/paper?  Were there any challenges?  Did anyone find anything new with Excel they would like to share?  Review criteria for success, while students look at their graphs to ensure they have all components. | 7 |

1. Moss, Connie M., and Susan M. Brookhart. "Chapter 1/The Lay Of The Land: Essential Elements Of The Formative Assessment Process." *Advancing Formative Assessment in Every Classroom: a Guide for Instructional Leaders*. Alexandria, VA: Association for Supervision and Curriculum Development, 2009. Print. [↑](#footnote-ref-1)